DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

Applicant's arguments filed 10 December 2007 have been fully considered but they are not persuasive.

In response to applicant's argument the examiner does not have the authority to determine which claims have the priority of the previously filed application to which this application claims priority as a continuation in part, the priority of a claim in a continuation in part is determined based on whether the claim has support in the previously filed disclosure. Claims 3, 5, 9-12 and 15 do not have any support in the disclosure of 10/198594. Therefore, these claims do not receive the benefit of priority of application 10/198594. It is upon the examiner to determine if each claim has support in the previously filed application's disclosure when determining the priority of the claim. See MPEP 201.11.

In response to applicant's argument that a double patenting rejection and the U.S.C. 103 rejection are inconsistent and not possible, the rejection under U.S.C. 103 is based on the search by the examiner for the currently pending claims. It is appropriate to provide both a search based rejection and a double patenting rejection when prior art references read on the claims of the pending application. Therefore the rejection under U.S.C. 103 and the double patenting rejection is not only consistent but appropriate.

In response to applicant's argument that '928 does not disclose a laser, '928 teaches the use of a source of oxygen (col. 2, lines 45-48), a cryoreactor having an input connected to the source of oxygen (col. 2, lines 52-55), and an optical resonator cavity receiving the excited state oxygen and having a laser output (col. 2, lines 66-68) all used with a laser (col. 2, lines 3-5).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that '928 does not show how it can contain the optical pump of '203, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). '203 teaches an optical pump, not toxic chemicals, to excite oxygen instead of using the chemical reaction of '928 in order to transmit the desired laser wavelength. The combination of the references does not require the use of chemicals of '928, instead it suggests the use of an optical pump to produce singlet oxygen.

In response to applicant's argument that '928 does not teach a cryoreactor, '928 teaches liquid oxygen (col. 2, lines 45-46, as liquid hydrogen peroxide) and the temperature range of liquid oxygen (col. 2, lines 44-45) in the reactor. The reactor of '928 can be classified as a cryoreactor, as described in claim 1. Therefore, '928 teaches the cryoreactor as claim in claim 1.

In response to applicant's argument that supercritical oxygen was not mentioned in either prior art reference, the use of supercritical oxygen in order to use oxygen as a cryogenic fluid was taught in reference '173.

In response to applicant's argument that cryoreactor having a waveguide is not taught by either prior art reference, '928 teaches the cryoreactor (col. 2, lines 59-61) includes an intake manifold (col. 2, lines 59-60), a waveguide (col. 2, lines 48-52) and an exhaust manifold (col. 2, lines 66-68).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4, 6-8, 13-14, 16-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7, 8, 3, 2, 14, 10, 12, 14, 15, 19 and 3 of U.S. Patent No. 6,658,038. Although the conflicting claims are not identical, they are not

patentably distinct from each other because U.S. Patent No. 6,658,038 contains the limitations of applicant's claims 1, 2, 4, 6-8, 13-14, 16-20, except that claims 1, 7, 8, 3, 2, 14, 10, 12, 14, 15, 19 and 3 of U.S. Patent 6,658,038 require the optical oxygen laser to contain iodine. The silence with respect to iodine in pending claims 1, 2, 4, 6-8, 13-14, 16-20 encompasses the possibility that the claimed oxygen laser may contain iodine.

Priority

Claims 3, 5, 9-12 and 15 are not disclosed in the application 10/198,594. Therefore, the priority of 10/198,594 is not granted to these claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4, 6, 8-13, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203).

Claim 1: '928 teaches an optical oxygen laser, comprising:

a source of oxygen (col. 2, lines 45-48);

a cryoreactor having an input connected to the source of oxygen (col. 2, lines 52-55); and

an optical resonator cavity receiving the excited state oxygen and having a laser output (col. 2, lines 66-68).

It does not explicitly teach an optical pump coupled to the cryoreactor and exciting the source of oxygen to form an excited state oxygen. However, '203 teaches a laser system producing singlet oxygen (col. 4, lines 3-8) employing an optical pump to excite the source of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to excite the source of oxygen in order to transmit the laser wavelength.

Claim 2: '928 and '203 teach the laser of claim 1. '928 teaches the source of oxygen is a liquid oxygen (col. 2, lines 44-45).

Claim 4: '928 and '203 teach the laser of claim 1. '928 teaches the source of oxygen is inherently pressurized (col. 2, lines 44-45).

Claim 6: '928 and '203 teach the laser of claim 1. '203 teaches the optical pump source is a diode array.

Claim 8: '928 and '203 teach the laser of claim 6. '203 teaches the diode array is bathed in the source of oxygen (col. 4, lines 3-15).

Claim 9: '928 and '203 teach the laser of claim 1. '928 teaches the cryoreactor (col. 2, lines 59-61) includes an intake manifold (col. 2, lines 59-60), a waveguide (col. 2, lines 48-52) and an exhaust manifold (col. 2, lines 66-68).

Claim 10: '928 and '203 teach the laser of claim 9. '928 teaches the waveguide has an optical input (col. 5, lines 53-56).

Claim 11: '928 and '203 teach the laser of claim 10. '928 teaches an exhaust pipe coupled to the exhaust manifold (col. 5, lines 50-53 and Fig. 10, part 26 coupled to part 24).

Claim 12: '928 and '203 teach the laser of claim 10. '928 teaches a pressure in the exhaust pipe is less than a pressure of the source of oxygen (col. 2, lines 59-64).

Claim 13: '928 teaches a method of operating an optical oxygen laser, comprising the steps of:

placing the excited state of oxygen in an optical resonant cavity having a laser output (col. 2, lines 66-68); and

exhausting a decayed state of oxygen from the optical resonant cavity (col. 3, lines 17-20).

It does not explicitly teach the step of illuminating a volume of oxygen with an optical pump source in a reactor to form an excited state of oxygen. However, '203 teaches a laser system producing singlet oxygen (col. 4, lines 3-8) comprising the step of illuminating a volume of oxygen with an optical pump source in a reactor to form an excited state of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to excite the source of oxygen in order to transmit the laser wavelength.

Claim 16: '928 and '203 teach the method of claim 13. '928 teaches step (a) further includes the step of:

al) cooling the optical pump with a source of oxygen (col. 2, lines 44-45).

Claim 17: '928 teaches an optical oxygen laser, comprising:

a reactor coupled to a source oxygen (col. 2, lines 52-55), the reactor combining a volume of oxygen from the source of oxygen (col. 5, lines 50-56); and

an optical resonant cavity receiving the excited state of oxygen and having a laser output (col. 2, lines 59-61).

It does not explicitly teach an optical pump to combine with a volume of oxygen. However, '203 teaches a laser system producing singlet oxygen (col. 4, lines 3-8) employing an optical pump to combine with a source of oxygen (col. 4, lines 11-15) in order to transmit the laser wavelength. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use an optical pump to combine with a volume of oxygen in order to transmit the laser wavelength.

Claim 18: '928 and '203 teach the laser of claim 17. '928 teaches the reactor has a waveguide where the light and the volume of oxygen are combined (col. 2, lines 48-56).

Claim 19: '928 and '203 teach the laser of claim 18. '928 teaches a pair of mirrors are placed at each end of the waveguide (col. 5, lines 50-56 and Fig. 10, part 23 "waveguide" and part 29, "mirrors").

Claim 20: '928 and '203 teach the laser of claim 17. '928 teaches the optical pump source is a diode array (col. 4, lines 11-15).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Lynch et al (U.S. Patent 5,836,173, hereafter '173).

'928 and '203 teach the laser of claim 1. They do not explicitly teach the source of oxygen is a supercritical oxygen. However, '173 teaches the use of supercritical oxygen (col. 4, lines 37-47) in order to use oxygen as a cryogenic fluid (col. 5, lines 9-12). Therefore, it would

have been obvious to one of ordinary skill in that art at the time the invention was made to use supercritical oxygen in order to use oxygen as a cryogenic fluid.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Rockenfeller (U.S. Patent 4,461,756, hereafter '756).

'928 and '203 teach the laser of claim 1. They do not explicitly teach the source of oxygen has a pressure between two and ninety atmospheres. However, '756 teaches a singlet oxygen generating laser with a source of oxygen pressurized between two and ninety atmospheres (col. 6, lines 51-55) in order to generate the highest yield. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use a singlet oxygen generating laser with a source of oxygen pressurized between two and ninety atmospheres in order to generate the highest yield.

Claim 7, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDermott (U.S. Patent 5,417,928, hereafter '928) in view of Hughes (U.S. Patent 4,074,203, hereafter '203) and further in view of Stone (U.S. Patent 4,523,315, hereafter '315).

Claim 7: '928 and '203 teach the laser of claim 6. It does not explicitly teach the diode array is coupled through an optical element to an optical fiber. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) with an optical fiber coupled to the laser source through an optical element (col. 2, lines 51-55) in order to achieve higher powers. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to

have a laser system producing singlet oxygen with an optical fiber coupled to the laser source through an optical element in order to achieve higher powers.

Claim 14: '928 and '203 teach the method of claim 13. They do not explicitly teach the step of (a) includes the step of powering a ytterbium doped fiber laser. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) using a ytterbium doped fiber laser to illuminate the volume of oxygen (col. 3, lines 13-18) in order to achieve higher powers. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to use a ytterbium doped fiber laser to illuminate the volume of oxygen in order to achieve higher powers.

Claim 15: '928 and '203 teach the method of claim 13. They do not explicitly teach the step of (a) includes the step of powering a ytterbium doped fiber laser. However, '315 teaches a laser system producing singlet oxygen (col. 2, lines 13-18) powering a Raman fiber laser to illuminate the volume of oxygen (col. 3, lines 13-15) in order to achieve higher powers. Therefore, it would have been obvious to one of ordinary skill in that art at the time the invention was made to power a Raman fiber laser to illuminate the volume of oxygen in order to achieve higher powers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK STAFFORD whose telephone number is (571)270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PJS/

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828